

WHAT IS CLAIMED IS:

- 1           1. A magnesium ammonium phosphate cement preparation comprising:  
2           a powder mixture having molar quantities of the components calcium (Ca),  
3           magnesium (Mg) and orthophosphate (P) in the mixture in the ranges  $1 < \text{Ca}/\text{P} < 1.5$  and  
4            $\text{Mg}/\text{P} < 0.5$ ; and  
5           an ammonium salt.
- 1           2. The preparation according to claim 1, wherein the ammonium salt  
2           comprises an aqueous solution having a pH in the range from 7 to 12.
- 1           3. The preparation according to claim 1, wherein the ammonium salt is  
2           present in the powder mixture at molar quantity of ammonium ( $\text{NH}_4$ ) less than 0.5.
- 1           4. The preparation according to claim 1, wherein the powder mixture  
2           comprises  $\alpha/\beta$ -tertiary calcium phosphate ( $\alpha/\beta$ -TCP).
- 1           5. The preparation according to claim 4, wherein the powder mixture  
2           further comprises  $\text{MgHPO}_4 \cdot 3 \text{H}_2\text{O}$ .
- 1           6. The preparation according to claim 5, wherein the powder mixture  
2           further comprises  $\text{Mg}_3(\text{PO}_4)_2$ .
- 1           7. The preparation according to claim 1, wherein the powder mixture  
2           comprises  $(\text{NH}_4)_2\text{SO}_4$ .
- 1           8. The preparation according to claim 1, wherein the powder mixture  
2           further comprises  $\text{KH}_2\text{PO}_4$ .
- 1           9. The preparation according to claim 1, wherein the powder mixture  
2           further comprises  $\text{Na}_2\text{HPO}_4$ .
- 1           10. The preparation according to claim 1, further comprising  $\text{SrCO}_3$ .
- 1           11. The preparation according to claim 10, wherein the  $\text{SrCO}_3$  is present in  
2           the range of 0.01 to 10 wt. % based on the total weight of the preparation.
- 1           12. The preparation according to claim 10, wherein the  $\text{SrCO}_3$  is present in  
2           the range of 0.1 to 5 wt.% based on the total weight of the preparation.

1                   13.     The preparation according to claim 1, further comprising ZnO.

1                   14.     The preparation according to claim 1, wherein the powder mixture  
2 further comprises  $\text{Ca}_2\text{NaK}(\text{PO}_4)_2$  and/or  $\text{CaKPO}_4$ .

1                   15.     The preparation according to claim 1, further comprising a fluoride.

1                   16.     The preparation according to claim 1, further comprising a  
2 pharmaceutical and/or a bioactive active ingredient.

1                   17.     The preparation according to claim 16, wherein the pharmaceutical  
2 and/or a bioactive active ingredient comprises a therapeutic dose of a component selected  
3 from the group consisting of antibiotics, cytostatic agents, analgesics, disinfectants, growth  
4 factors, proteins or elastin inhibitors.

1                   18.     A magnesium ammonium phosphate cement preparation comprising:  
2                   a powder mixture comprising  $\alpha$ -TCP,  $\beta$ -TCP,  $\text{MgHPO}_4 \cdot 3 \text{H}_2\text{O}$ ,  $\text{KH}_2\text{PO}_4$  and  
3      $\text{Na}_2\text{HPO}_4$ ; and  
4                   an ammonium salt.

1                   19.     The preparation according to claim 18, wherein the powder mixture  
2 further comprises  $\text{SrCO}_3$ .

1                   20.     The preparation according to claim 19, wherein the  $\text{SrCO}_3$  is present in  
2 a quantity of 0.01 to 10 wt.% based on the total weight of the preparation.

1                   21.     The preparation according to claim 18, further comprising ZnO.

1                   22.     The preparation according to claim 18, wherein the powder mixture  
2 further comprises  $\text{Ca}_2\text{NaK}(\text{PO}_4)_2$  and/or  $\text{CaKPO}_4$ .

1                   23.     The preparation according to claim 18, further comprising a fluoride.

1                   24.     The preparation according to claim 18, further comprising a  
2 pharmaceutical and/or a bioactive active ingredient.

1                   25.     The preparation according to claim 24, wherein the pharmaceutical  
2 and/or a bioactive active ingredient comprises a therapeutic dose of a component selected

3 from the group consisting of antibiotics, cytostatic agents, analgesics, disinfectants, growth  
4 factors, proteins or elastin inhibitors.

1 26. A magnesium ammonium phosphate cement preparation comprising:  
2 a powder mixture comprising  $\alpha$ -TCP,  $\beta$ -TCP,  $(\text{NH}_4)_2\text{SO}_4$ ,  $\text{KH}_2\text{PO}_4$  and  
3  $\text{Na}_2\text{HPO}_4$ ; and  
4 a magnesium salt.

1 27. The preparation according to claim 26, wherein the magnesium salt is  
2  $\text{MgHPO}_4 \cdot 3 \text{ H}_2\text{O}$ .

1 28. The preparation according to claim 26, wherein the powder mixture  
2 further comprises  $\text{SrCO}_3$ .

1 29. The preparation according to claim 28, wherein the  $\text{SrCO}_3$  is present at  
2 0.01 to 10 wt.% based on the total weight of the preparation.

1 30. The preparation according to claims 26, further comprising  $\text{ZnO}$ .

1 31. The preparation according to claims 26, wherein the powder mixture  
2 further comprises  $\text{Ca}_2\text{NaK}(\text{PO}_4)_2$  and/or  $\text{CaKPO}_4$ .

1 32. The preparation according to claim 26, further comprising a fluoride.

1 33. The preparation according to claim 26, further comprising a  
2 pharmaceutical and/or a bioactive active ingredient.

1 34. The preparation according to claim 33, wherein the pharmaceutical  
2 and/or a bioactive active ingredient comprises a therapeutic dose of a component selected  
3 from the group consisting of antibiotics, cytostatic agents, analgesics, disinfectants, growth  
4 factors, proteins or elastin inhibitors.

1 35. A magnesium ammonium phosphate cement preparation comprising:  
2 a powder mixture comprising  $\alpha$ -TCP,  $\beta$ -TCP, primary or secondary  
3 ammonium phosphate,  $\text{KH}_2\text{PO}_4$  and  $\text{Na}_2\text{HPO}_4$ ; and  
4 a magnesium salt.

1                   36.    The preparation according to claim 35, wherein the magnesium salt is  
2    MgHPO<sub>4</sub> • 3 H<sub>2</sub>O.

1                   37.    The preparation according to claim 35, wherein the powder mixture  
2    further comprises SrCO<sub>3</sub>.

1                   38.    The preparation according to claim 37, wherein the SrCO<sub>3</sub> is present at  
2    0.01 to 10 wt.% based on the total weight of the preparation.

1                   39.    The preparation according to claim 35, further comprising ZnO.

1                   40.    The preparation according to claim 35, wherein the powder mixture  
2    further comprises Ca<sub>2</sub>NaK(PO<sub>4</sub>)<sub>2</sub> and/or CaKPO<sub>4</sub>.

1                   41.    The preparation according to claim 35, further comprising a fluoride.

1                   42.    The preparation according to claim 35, further comprising a  
2    pharmaceutical and/or a bioactive active ingredient.

1                   43.    The preparation according to claim 42, wherein the pharmaceutical  
2    and/or a bioactive active ingredient comprises a therapeutic dose of a component selected  
3    from the group consisting of antibiotics, cytostatic agents, analgesics, disinfectants, growth  
4    factors, proteins or elastin inhibitors.